

Recent progress on infrasound studies by using ISOP datasets obtained in Antarctica

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Since 2012, we have successfully been operated multiple-site infrasound observation at around Syowa, Antarctica, following our pilot observation with one sensor at Syowa since 2008 as a plan of ISOP (InfraSound Observation Project). Currently 9 sensors are operated at 5 sites in Lützow-Holm Bay region, East Antarctica, with 2 triangle arrayed stations at S17 and Syowa. Datasets obtained at Syowa station can be accessed almost in real time and transferred automatically to NIPR (National Institutes of Polar Research), Tokyo with a satellite link, while that obtained at the other sites are annually delivered by manually when JARE (Japan Antarctic Research Expedition) expedition members visited the each site. Such datasets have been archived as WIN format files at NIPR year by year and used for further analyses. Almost all the sensors used are Chaparral Physics Model 25 and sampling rate is 100 Hz. Another sensor of ParoScientific 6000-16B and Hakusan SI104 was used for years at a site of Skallen. Seismic observation has also been operated at Syowa for long years and at exactly the same sites of infrasound observation in there years. Such observation enables us to investigate the ice-quake source region estimation, and statistically and gradually opens our new knowledge about the nature of lithosphere-cryosphere-atmosphere coupling. For example, Murayama et al. (2017) revealed source region of the ice-quakes are clearly distributed on the edge of ice sheets as well as continental coast lines. Another source might be identified as the glacier events. Kanao et al. (2017) reported some large-scale detached ice sheets are successively collapsed with the edge of the ice sheets with inducing infrasound in the surrounded region. PMCC software usually used for the CTBTO data analyses have been used for direction findings from the arrayed observatories but another trial of using grid search method with an automatic N-type waveform detection algorithm is currently challenged. Recent progress of infrasound studies in Antarctica will be shown in this talk.